

Serial No. 10/580,811
 Reply to Final Office Action of December 1, 2009
 Reply/Amdt. dated February 17, 2010

PATENT
 PU030336
 Customer No. 24498

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Listing and Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 and 2 (cancelled)

Claim 3 (currently amended): **A display for producing a substantially seamless combined image on a screen from at least first and second images, comprising:**

at least first and second projectors for projecting corresponding first and second images separately onto a screen, said projectors projecting said first and second images such that a portion of said first image overlaps a portion of said second image so as to define at least one seam region on said screen;

an image processor coupled to said first and second projectors for adjusting brightness of said first and second image portions such that said seam is substantially not visible to a viewer; wherein said processor adjusts said brightness of said first and second image portions according to a quadratic relationship. ~~The display of claim 1~~ wherein said quadratic relationship is described by the relationship:

$$x1 = \left(0.5 \times \cos\left(\frac{\Pi \times j}{\text{overlap}}\right) + .5 \right)^{\frac{1}{\text{gamma}}}$$

and

$$x2 = \left(1 - \left(0.5 \times \cos\left(\frac{\Pi \times j}{\text{overlap}}\right) + .5 \right) \right)^{\frac{1}{\text{gamma}}}$$

wherein x1 represents a pixel from said first image portion after processing, x2 represents a pixel from said second image portion after processing, j represents

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the pixel number in the seam region corresponding to the location of overlapping pixels x1 and x2, overlap is the seaming area in number of pixels, and gamma is related to the gamma correction of the projector.

Claims 4 – 13 (cancelled)

Claim 14 (previously presented): A method for producing a substantially seamless combined image on a screen from at least first and second images, comprising:

providing at least first and second projectors for projecting corresponding first and second images separately onto a screen, said projectors projecting said first and second images such that at least a portion of said first image overlaps at least a portion of said second image so as to define at least one seam region on said screen;

processing said first and second image portions so as to adjust at least one characteristic of said first and second image portions in accordance with corresponding characteristics of said projectors;

projecting said adjusted first and second image portions onto said screen;

adjusting the brightness of said first and second image portions in accordance with the linearly inverse relationships:

$$x1 = \left(\left(\frac{j}{\text{overlap}} \right) \right)^{1/\text{gamma}} \quad \text{and} \quad x2 = \left(\left(1 - \frac{j}{\text{overlap}} \right) \right)^{1/\text{gamma}}$$

wherein x1 represents a pixel from said first image portion after processing, x2 represents a pixel from said second image portion after processing, j represents the pixel number in the seam region corresponding to the location of overlapping pixels x1 and x2, overlap is the seaming area in number of pixels, and gamma is related to the gamma correction of the projector.

Claim 15 (previously presented): The method of claim 14 wherein said characteristics of said

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projectors are selected from the group comprising projector lens characteristics, image transfer function characteristics, display transfer function characteristics, imager gamma, display gamma.

Claim 16 (previously presented): The method of claim 14 wherein said adjustment is determined without relying on information provided by any screen image capture means.

Claim 17 (previously presented): The method of claim 14 further including a step of gamma correcting said displayed image by applying a first gamma correction to portions of said images within said seam region and a second gamma correction, different from said first gamma correction, to remaining portions of said displayed image.

Claim 18 (previously presented): The method of claim 14 including wherein said processing step is carried out such that said combined image is of substantially uniform brightness when displayed on said screen.

Claims 19 – 23 (cancelled)